

Lecture #1

NJG

January 19, 2016

Materials For Course

- Computer and vga cable
- notebooks (moleskin and Leuchterm)
- plain paper (for exercise)
- grid graph paper
- name tags
- note cards
- personal pledge
- scientific papers

Introduction

- myself
- office hours (MWF 1:00 pm or by appointment)
- (ngotelli@uvm.edu)
- TA Devin Mueller (dlmuelle@uvm.edu)
- UVM undergraduate math major, art minor
- office hours Tuesdays 10-12 in 209 MLS

History of the course

- small class, lectures, readings
- larger with random groups
- getting students to participate

Why the need?

- ecology as a quantitative science
- programming most like solving real problems in science
- environment for interactive learning and thinking on your feet
- polish speaking and presentation skills

What the course will cover

- open-source tools for science (word processing, graphics, computer modeling, slides)
- basic to intermediate r programming (a crash course)
- creating simple graphs for understanding mathematical equations
- use of probability distributions (normal, uniform, Poisson, binomial, gamma, beta)
- stochastic models of population growth and community change
- statistical analysis with R (ANOVA, regression crash course)
- advanced modeling topics (Markov models, spatially explicit models, individual-based models)
- conference style presentation of original research project

Student participation & organization of schedule

- random assignment to groups (do this now)
- work on assignments and get help in your group!
- random call of students to demonstrate their code and answers

```
TodaysGroups <- RandomGroups(z=classNames,groups=7)
TodaysGroups
TodaysGroups[1]
TodaysGroups[2]
TodaysGroups[3]

sample(classNames,1)
weights <- rep(40,3)
weights <- c(rep(1,30),weights)
sample(classNames,1,prob=weights)
```

Assignments

- daily classroom assignments
- weekly homework assignments
- in class exams (“open book”)
- final paper
- final presentation

Course Materials

- website location: (<http://gotellilab.github.io/Bio264/>)

- course description
- lecture schedule
- personal pledge

Introductions

- notecards
 - Name
 - Major, year in school
 - previous bio, stats courses
 - “Fun Fact”
- introduce yourself to everyone in your group
- now a few introductions from randomly chosen students

Old school tools

- hand-written notes
- notebooks to use (bring in samples)
- take notes on papers

Class exercise

- read scientific paper
- create a “cheat sheet” (~20 minutes)
- pair up with someone in your group who did not read the same paper
- random student presentations

Check on software installation!